The Resilient Washington State Initiative

CPARM Meeting

Sept. 7, 2011

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Emergency Management Council

Presentation Overview

- Project Background
- Key points in “The Resilient City” report.
- Synopsis of how these issues relate to Washington State.
- Project Approach & Status
- Next Steps

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Background

- The project is based upon the San Francisco Urban Planning and Research Association (SPUR) Report, entitled "*The Resilient City*", which examines the current state of resilience to a scenario quake in San Francisco.

- Four (4) major policy sections are addressed within the first report:
  - Defining Resilience – Defining what we need from our seismic mitigation policies.
  - The Dilemma of Existing Buildings – Private ownership, public risk.
  - Building it Right the First Time – Improving the seismic performance of new buildings.
  - Lifelines – Upgrading infrastructure to enhance earthquake resilience.

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Background

- The RWS Initiative is a strategic planning process for achieving state-level resilience with respect to earthquake hazards.
  - The planning process will identify actions and policies before, during, and after an earthquake event that can leverage existing policies, plans and initiatives to realize disaster resilience within a 50-year life cycle.
  - The Resilient Washington State plan will identify means to coordinate agencies, public-private partnerships, and standards towards this same goal.
- This project is intended to lay a foundation for implementation of long-term seismic risk reduction policies.

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Defining Resilience

- SPUR uses engineering standards – Define how many deaths, how many building demolitions (or infrastructure failures), and how long a recovery time for various levels of EQ.
- Resilience as a disaster, but not a catastrophe.
- Ability to recover – govern, lifelines to resume in short time frame, people stay in homes, resume normal living routine in weeks and return to new “normal” in few years.

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RWS Definition of Resilient State

- **A resilient state is one that maintains services and livelihoods after an earthquake. In the event that services and livelihoods are disrupted, recovery occurs rapidly with minimal social disruption and results in a new and better condition.**

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RWS Definition of Resilient State

- Property Protection – Public and private property within the state of Washington should be built, retrofitted, or rebuilt to minimize earthquake-induced damage. This includes proper design and construction of both structural and non-structural elements.

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RWS Definition of Resilient State

- Economic Security – Residents and businesses within the state of Washington should have access to income opportunities to meet basic needs before and soon after an earthquake. This includes sufficient employment opportunities, market access, distribution capacity, and supplier access.

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RWS Definition of Resilient State

- Environmental Protection – The natural resources and ecosystems of Washington State should be managed in such a way as to minimize earthquake-induced damage. This includes the use of proper growth management, accident response capacity, and industrial safety measures.

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RWS Definition of Resilient State

- Life Safety and Human Health – Residents of the state of Washington should not suffer life-threatening injuries from earthquake-induced damage or develop serious illness from lack of emergency medical care after and earthquake. This includes enforcing and updating building codes, eliminating non-structural hazards, and ensuring continuity of emergency heath care.

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RWS Definition of Resilient State

- Community Continuity – All communities within the state of Washington should have the capacity to maintain their social networks and livelihoods after an earthquake disaster. This includes prevention of social-network disruption, social discrimination, and community bias.

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Dilemma of Existing Buildings

- Dovetail mitigation with response and recovery – if we are not prepared to mitigate we must be prepared to respond and recover – if we are not ready to respond and recover we must mitigate.

- Shortfall in resilience is a problem almost a century in the making and will not be quickly solved in a decade.
  - Pilot School Assessment Project

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TARGET STATES OF RECOVERY FOR SAN FRANCISCO'S BUILDINGS AND INFRASTRUCTURE

INFRASTRUCTURE CLUSTER FACILITIES	Event occurs	Phase 1 Hours			Phase 2 Days		Phase 3 Months		
		4	24	72	30	60	4	36	36+
CRITICAL RESPONSE FACILITIES AND SUPPORT SYSTEMS									
Hospitals								X	
Police and fire stations			X						
Emergency Operations Center	X								
Related utilities						X			
Roads and ports for emergency				X					
CalTrain for emergency traffic					X				
Airport for emergency traffic				X					
EMERGENCY HOUSING AND SUPPORT SYSTEMS									
95% residence shelter-in-place								X	
Emergency responder housing				X					
Public shelters							X		
90% related utilities								X	
90% roads, port facilities and public transit							X		
90% Muni and BART capacity						X			
HOUSING AND NEIGBORHOOD INFRASTRUCTURE									
Essential city service facilities							X		
Schools							X		
Medical provider offices								X	
90% reighborhood retail services									X
95% of all utilities								X	
90% roads and highways						X			
90% transit						X			
90% railroads							X		
Airport for commercial traffic					X				
95% transit							X		
COMMUNITY RECOVERY									
All residences repaired, replaced or relocated									X
95% neighboorhood retail businesses open								X	
50% offices and workplaces open									X
Non-emergency city service facilities								X	
All businesses open									X
100% utilities									X
100% roads and highways									X
100% travel									X

Source: SPUR analysis

The "x's" in the chart to the right indicate SPUR's best educated guesses about current standards for recovery times. The shaded areas represent the goals — targets based on clearly stated performance measures (see next page) — for recovery times for the city's buildings and lifelines. The gaps between "x's" and shaded boxes represent how far we are from meeting resiliency targets.

Target States of Recovery for Buildings & Infrastructure

TARGET STATES OF RECOVERY

Performance measure	Description of usability after expected event	BUILDINGS	LIFELINES
	Category A: Safe and operational		
	Category B: Safe and usable during repairs	100% restored in 4 hours	
	Category C: Safe and usable after moderate repairs	100% restored in 4 months	
	Category D: Safe and usable after major repairs	100% restored in 3 years	
X	Expected current status		

Note: Categories A–D are defined on page 10.

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Incorporate Transparent Performance Measures

DEFINING STAGES OF DISASTER RECOVERY

PHASE	TIMEFRAME	CONDITION OF THE BUILT ENVIRONMENT
1	**1 to 7 days**	**Initial response and staging for reconstruction**
	Immediate	Mayor proclaims a local emergency and the City activates its Emergency Operations Center. Hospitals, police stations, fire stations, and City department operations centers are operational.
	Within 4 hours	People who leave or return to the city in order to get home are able to do so. Lifeline systems that support critical response facilities are operational.
	Within 24 hours	Emergency response workers are able to activate and their operations are fully mobilized. Hotels designated to house emergency response workers are safe and usable. Shelters are open. All occupied households are inspected by their occupants, and less than 5 percent of all dwelling units are found unsafe to be occupied. Residents can shelter in place[1] in superficially damaged buildings even if utility services are not functioning.
	Within 72 hours	Ninety percent of the utility systems (power, water, wastewater, natural gas and communication systems) are operational and serving the facilities supporting emergency operations and neighborhoods. Ninety percent of the major transportation system routes, including Bay crossings and airports, are open at least for emergency response. The initial recovery and reconstruction efforts will be focused on repairing residences and schools to a usable condition, and providing the utilities they need to function. Essential City services are fully restored.
2	**30 to 60 days**	**Housing restored — ongoing social needs met**
	Within 30 days	All utility systems and transportation routes serving neighborhoods are restored to 95 percent of pre-event service levels, public transportation is running at 90 percent capacity, public schools are open and in session. Ninety percent of the neighborhood businesses are open and serving the workforce. Reconstruction efforts will be focused on repairing residences, schools and medical provider offices to a usable condition, and providing the utilities they need to function. Essential City services are fully restored and medical provider offices are usable..
	Within 60 days	Airports are open for general use, public transportation is running at 95 percent capacity, minor transportation routes are repaired and reopened.
3	**Several years**	**Long-term reconstruction**
	Within 4 months	Temporary shelters are closed, with all displaced households returned home or permanently relocated. Ninety-five percent of the community retail services are reopened. Fifty percent of the non-workforce support businesses are reopened.
	Within 3 years	All business operations, including all City services not related to emergency response or reconstruction, are restored to pre-earthquake levels.

Source: SPUR analysis

SPUR has defined performance goals in terms of four "clusters" of infrastructure (page 9), eight performance categories and three response and recovery phases (shown in this table). We are not recommending that all facilities be upgraded without regard to cost. Rather, our intent is to require only those improvements needed to assure a quick recovery — or the level of resilience desired for each stage of recovery.

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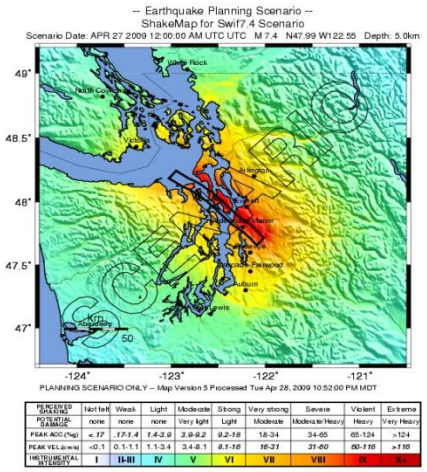
Project Approach

- Non-Technical: Aimed at Policy/Decision Makers
- Review existing information and incorporate new data from the USGS/ DNR/EMD Scenario Catalog Project.



- Establish formal Sub Groups with subject matter expert leads to facilitate information gathering from key partners and obtain buy in.
- Host a workshop series to engage stakeholders and local jurisdictions in the process.
  - A truly Resilient State is made up of Resilient cities, counties, & tribes - local jurisdictions can adopt this approach (i.e. San Francisco model) at a smaller scale.
- Development of The Resilient Washington State Initiative is expected to take 2.5-3 years.

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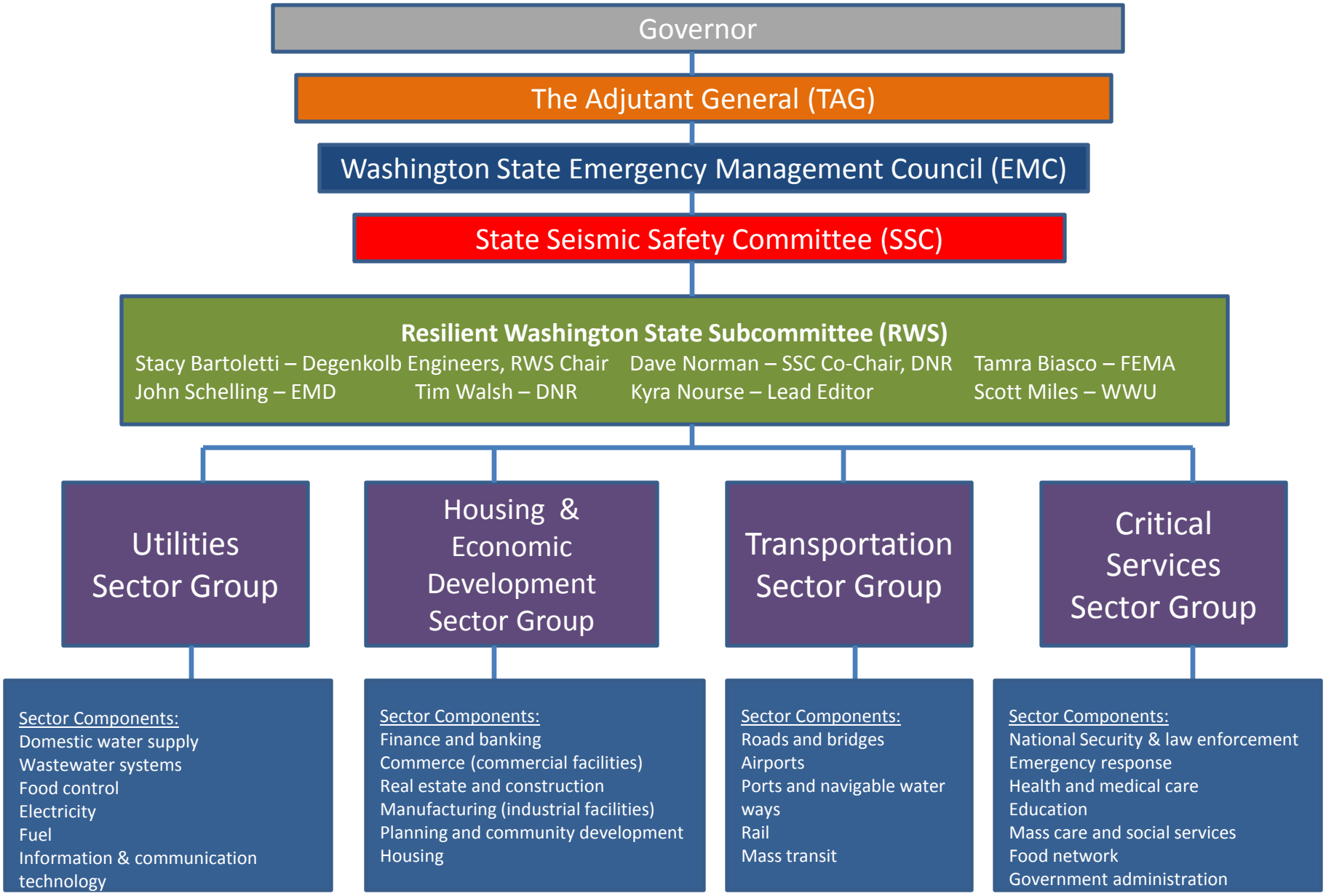
Resilient Washington State – Organizational Structure



Project Approach (cont.)

- The participants in the sector groups will work within their areas of expertise to evaluate—relative to earthquake resilience—the current condition of infrastructure or service located throughout the State of Washington.

- Specifically, each sector group will address the following items:
  - *Identify current capacities.*
  - *Develop targets for the desired level of performance.*
  - *Develop target timeframes for the restoration of services.*

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Project Approach (cont.)

- *Examine vulnerabilities and key interdependencies between various sectors. For example, if water could/should be restored within a day, but its vulnerability is that it depends on electricity, which will take longer than a day, then a policy should be developed to address electricity as a priority for recovery.*
  - *To provide this type of information, sector groups should define key vulnerabilities as part of their commentary on the table.*
- *Include notes on reference materials or existing information sources.*
- *Recommend policies or actions for statewide action to achieve desired targets and present those recommendations in a clear and concise document.*
- *Other issues to be determined by the sector group.*

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TARGET STATES OF RECOVERY FOR SECTORS AND COMPONENTS IN WASHINGTON STATE

Resilient Washington State Sectors and Components	Event occurs	0–24 hours	1–3 days	3–7 days	1 week–1 month	1 month–3 months	3 months–1 year	1 year–3 years	3 + years
Critical Services									
Law enforcement				×					
Emergency response				×					
Health and medical care							×		
Education							×		
Mass care					×				
Social services						×			
Food network					×				
Government administration					×				

TARGET STATES OF RECOVERY FOR SECTORS AND COMPONENTS IN WASHINGTON STATE

Resilient Washington State Sectors and Components	Event occurs	0–24 hours	1-3 days	3-7 days	1 week - 1 month	1 month- 3 months	3 months- 1 year	1 year - 3 years	3 + years
Transportation Infrastructure & Systems									
Interstate 5									
- Puget Sound				Min Level	Functional	Operational		X	
- South End (Chehalis South)			Min Level	Functional	Operational		X		
- North End (Everett North)				Min Level	Functional	Operational		X	
Interstate 90									
- Puget Sound (Snoquamie Pass West)				Min Level	Functional	Operational		X	
- Cascades (Snoqualmie to Moses Lake)			Min Level	Functional	Operational		X		
- Central / Eastern WA (Moses Lake to ID)			Min Level	Functional	Operational		X		
Interstate 405									
- South End (Tukwila to I-90)			Min Level	Functional		Operational		X	
- North End (i-90 to Lynnwood)				Min Level	Functional	Operational		X	
Ferry Operations		Min Level		Functional	Operational		X		
Floating Bridges									
- SR 520				Min Level	Functional	Operational		X	
- I-90			Min Level	Functional	Operational		X		
- Hood Canal							X		
25% of Major and Minor Arterials Functional		Min Level	Functional	Operational	X				
50% of Major and Minor Arterials Functional		Min Level		Functional	Operational	X			
75% of Major and Minor Arterials Functional			Min Level	Functional		Operational	X		
90% of Major and Minor Arterials Functional			Min Level		Functional		Operational	X	
Airports			Min Level	Functional	Operational			X	
Ports and navigable waterways				Min Level	Functional	Operational		X	
Rail				Min Level	Functional	Operational		X	
- Freight				Min Level	Functional	Operational		X	
- Passenger				Min Level	Functional	Operational		X	
Pipeline				Min Level	Functional	Operational		X	
Mass transit (As listed in the Major and Minor Arterials Functional)								X	
Airport for emergency traffic		Functional			X				

- Questions?

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